IOWA HIGHWAY RESEARCH BOARD (IHRB)

Minutes of December 9, 2010

Regular Board Members Present

A. Abu-Hawash
J. Berger
V. Dumdei
R. Knoche
J. Moellering
B. Moore
M. Nahra
C. Schloz
D. Schnoebelen
J. Waddingham
W. Weiss
R. Younie

Alternate Board Members Present

R. Fangmann
R. Haden
D. Miller
L. Roehl

Members With No Representation

D. Ahart
J. Alleman
J. Joiner

Secretary - M. Dunn

Visitors

Donna Buckwald	Iowa Department of Transportation
Edward Engle	Iowa Department of Transportation
Mary Starr	Iowa Department of Transportation
Paul Wiegand	Iowa State University
Jin Zhu	University of Northern Iowa

The meeting was held at the Iowa Department of Transportation Ames Complex, Materials East/West Conference Room, on Thursday, December 9, 2010. The meeting was called to order at 1 p.m. by Chairperson Jay Waddingham with an initial number of 12 voting members/alternates at the table..

Agenda

No changes were made to the Agenda.

Motion to approve Minutes from the October 29, 2010 meeting by R. Younie. 2nd by M. Nahra. Motion carried with 12 aye, 0 nay, 0 abstaining.

FINAL REPORT TR-566, "Utility Cut Repair Techniques – Investigation of Improved Utility Cut Repair Techniques to Reduce Settlement in Repaired Areas: Phase II," Larry Stevens, HR Green ($165,316)

BACKGROUND

The common procedure of installing utilities such as gas, water, telecommunications and sanitary and storm sewers requires excavation to install pipes or lines. Utility cut restoration has a significant effect on pavement performance. It is often observed that the pavement within and around utility cuts fails prematurely, increasing maintenance costs. The magnitude of the effect depends upon pavement patching procedures, backfill material condition, climate, traffic, and pavement condition at the time of patching. Several cuts in a roadway can lower the road life by fifty percent.

OBJECTIVES
This investigation is part of a multiphase research project to improve long-term performance of utility cut restoration trenches, improve pavement patch life and reduce maintenance of repaired areas.

BENEFITS
This research will assist local agency utility construction and monitoring using recommended principles of trench subsurface settlement and load distribution in utility cut restoration areas using instrumented trenches. Instrumented trenches monitor changes in temperature, pressure, moisture content, and settlement as a function of time to determine the influences of seasonal changes on utility cut performance.

Q: Would concrete provide better patch than asphalt?
A: Yes, this was clearly demonstrated in Phase I. The concrete patch was tied in with adjacent pavement so there was wider distribution of load.

Q: The two critical elements are moisture content and compaction, correct?
A: Yes. Those are the two key things. We haven't really come up with a solution for the Zone of Influence, although I think the T-Top holds promise; however, with the square edges there may have been a movement of the Zone of Influence outward. One of the suggestions was to use a beveled section to remove a portion of that which may be slough from the top.

Motion to Approve by M. Nahra. 2nd by V. Dumdei.
Motion carried with 12 aye, 0 nay, 0 abstaining.

FINAL REPORT TR-607, "Review of Inconsistencies Between SUDAS & Iowa DOT Specifications,"
Steve Klocke, Snyder & Associates ($111,455)

BACKGROUND
The Statewide Urban Design And Specifications (SUDAS), developed from the original Des Moines Metropolitan Standards, have become benchmark documents used for construction of water main, sanitary sewer, storm sewer, site improvements, and other urban items of work in Iowa.

The use and influence of the SUDAS Specifications has grown, and the Iowa DOT is interested in using SUDAS specifications which were developed specifically for urban construction because both designers and contractors are familiar with them. However, due to differences with definitions, general conditions, and format between the Iowa DOT and SUDAS specifications, utilizing SUDAS Specifications on DOT projects in the past has proven difficult and therefore limited.

OBJECTIVES
To continue updating SUDAS items in Division 7 including Section 7010, (PCC Pavement – figures only), Section 7020 (HMA Pavement - figures only), and Section 7040 (Pavement Rehabilitation). In addition, a majority of the specifications and figures in Division 9 also required updates. This included Section 9020 (Sodding), Section 9030 (Plant Material and Planting), Section 9050 (Gabions and Rip Rap), Section 9060 (Fencing), Section 9070 (Retaining Walls), and Section 9080 (Concrete Steps and Handrail).

BENEFITS
By having a consistent method for bidding and constructing public improvements, confusion and unknowns are eliminated and contractors can be more confident in their bids, resulting in more competitive bids and reduced bid prices.

Motion to Approve by R. Knoche. 2nd by D. Schnoebelen.
Motion carried with 12 aye, 0 nay, 0 abstaining.

FINAL REPORT TR-611, "Wireless Sensor Networks for Infrastructure Monitoring," M.D. Salim, University of Northern Iowa ($74,842)

BACKGROUND
A good system of preventive bridge maintenance enhances the ability of engineers to manage and monitor bridge conditions and take proper action at the right time. Traditionally infrastructure inspection is performed via infrequent periodical visual inspection in the field. Wireless sensor technology provides an alternative cost-effective approach for constant monitoring of infrastructures. Scientific data-acquisition systems make reliable structural measurements even in inaccessible and harsh environments using wireless sensors. With advances in sensor technology and availability of low cost integrated circuits, a wireless monitoring sensor network is considered the new generation technology for structural health monitoring.

OBJECTIVES
To implement a wireless sensor network for monitoring the behavior and integrity of highway bridges; at the system's core is a low cost, low power wireless strain sensor node whose hardware design is optimized for structural monitoring applications. The key components of the systems are the control unit, sensors, software and communication capability. The extensive information developed for each of these areas has been used to design the system.

BENEFITS
A major benefit is for the public works employee assigned to the task of monitoring. They would only need to drive to the proximity of the bridge that has a wireless sensor network deployed, collect the data automatically to a laptop, and perform the data analysis accordingly. It will improve inspection efficiency and the working environment for public workers.

Q: Are you able to harvest cathodic energy?
A: We haven't explored that possibility but there are potential sources of energy available for harvesting.

Motion to Approve by A. Abu-Hawash. 2nd by J. Moellering.
Motion carried with 12 aye, 0 nay, 0 abstaining.

FINAL REPORT TR-580, "Pavement Markings and Safety," Omar Smadi, Iowa State University (The presentation was made at the July, 2010, IHRB Travel Meeting) ($96,113)

This Final Report was presented at the IHRB July 2010 Travel Meeting. Although recommendations and conclusions were presented at that time, those items were not incorporated into the final report. The Board has reviewed the final report with those additions and a vote made to approve.

Motion to Approve by R. Younie. 2nd by R. Knoche.
Motion carried with 12 aye, 0 nay, 0 abstaining.

PROPOSAL *Evaluation and Guidance on Effective Traffic Calming for Small Communities*, Shauna Hallmark, Iowa State University/InTrans ($55,000)

BACKGROUND
Small communities often lack the expertise and resources necessary to address speeding and the persistent challenge of slowing down high-speed through traffic. Community entrance areas are especially problematic given that drivers must transition from a high-speed (often rural), roadway setting to a low-speed community environment.

OBJECTIVES

- Summarize information about effective transition zone planning and design practice
- Identify and summarize techniques used to manage speeds in transition zones
- Demonstrate the effectiveness of techniques that are practical for high- to low-speed transition zones
- Acquire more information on techniques showing promise that lack sufficient evidence of effectiveness
- Develop an application toolbox to assist small communities in selecting appropriate transition zones and selecting effective techniques for transitioning from high-speed to low-speed roadways

BENEFITS

This research will provide tools that agencies can use to design transition zones from high-speed to low-speed roadways.

C: Your outreach is an area that really needs some concentrated work (getting information out to city clerks and mayors, for example). We have problems when cities put up stop signs on Farm-to-Market extensions. Recently, I saw a 20 mph speed limit on a state highway when there was no justification for it. It's a problem for those who are responsible for highways that link these small towns.

Q: Isn't there already standards for setting transition zones?
A: Yes, but those are not clear down to the local level.

Motion to Approve by M. Nahra. 2nd by V. Dumdei.
Motion carried with 12 aye, 0 nay, 0 abstaining.

*** One Member Left the Table***

PROPOSAL ***Revision to the SUDAS Traffic Signal Standards – Phase II,*** Neal Hawkins, Iowa State University/InTrans ($75,000)

BACKGROUND

Recently completed IHRB project (TR-546) provided an update to the traffic signal content within the SUDAS Design Manual and Standard Specifications. The project task force identified additional work to be completed.

OBJECTIVES

- Update all of the existing SUDAS traffic signal specifications figures
- Conduct a structural review of footing steel and concrete capacities and standards and incorporate this information into the SUDAS Design Manual
- Develop and include non-proprietary, performance based NEMA and Type 170 controller and cabinet specifications
- Develop and include non-proprietary fiber optic cable, modem, and communications specifications
- Develop and include non-proprietary video monitoring/camera specifications

BENEFITS

Public agencies, designers, and other industry contributors will gain significant savings through use of updated materials and new guidance on traffic signal design and construction. This information is expected to improve design consistency, assist agencies in getting up-to-date equipment and installations, reduce change orders, and improve intersection and corridor safety.

Motion to Approve by R. Knoche. 2nd by M. Nahra.
Motion carried with 11 aye, 0 nay, 0 abstaining.

NEW BUSINESS

IHRB Selection of Chair (University) and Vice-Chair (City) for 2011
Mark: The 2011 rotation calls for a university chair and a city vice-chair. First, we'd like to acknowledge and thank Jay Waddingham, Franklin County Engineer for acting as chairman and Doug Schnoebelen, The University of Iowa, for acting as vice-chair during the past year.

Nomination to appoint Doug Schnoebelen as Chairperson by M. Nahra. 2nd by A. Abu-Hawash.
Moved nominations cease and cast a unanimous ballot for Doug Schnoebelen.
Voting: Motion carried with 11 aye, 0 nay, 0 abstaining.
Doug Schnoebelen appointed as acting Chair for dates from January 1, 2011 through December 31, 2011.

Nomination to appoint John Joiner acting Vice-Chair by R. Knoche. 2nd by M. Nahra.
Moved nominations cease and cast a unanimous ballot for John Joiner.
Voting: Motion carried with 11 aye, 0 nay, 0 abstaining.
***** John Joiner appointed as Vice-chair for dates from January 1, 2011 through December 31, 2011.

Changes on the Board for 2011 include:
- District 2 Member will be J.D. King, replacing Jay Waddingham. His Alternate will be Doug Miller, Kossuth County Engineer.
- District 5 Member will be Ernie Steffensmeier, replacing Brian Moore. His Alternate will be Larry Roehl, Louisa County Engineer.
- District 3 Alternate will be Ron Haden, Calhoun and Sac Counties' Engineer.
- City Member (Ron Knoche) Alternate will be Bruce Braun, City of Des Moines.

Certificates for service
Certificates for service were awarded to Jay Waddingham and Brian Moore with the Board's appreciation extended for all of their contributions to transportation research in Iowa.

Also, after over 14 years of diligent service, Edward Engle, Secondary Roads Coordinator, has accepted a new position at the Iowa DOT. On behalf of the IHRB, Mark Dunn presented Ed with a certificate of appreciation for his many contributions to the effectiveness of the Board and development of transportation research in Iowa.

Note: In addition to hiring a new secondary roads coordinator, the Research and Technology Bureau has created a new position for 2011. The new implementation engineer will manage the SP&R program and spend the majority of their time developing ways to implement research (federal and state) while working with the secondary road coordinator.

ADJOURN
Motion to Adjourn by R. Younie. 2nd by M. Nahra.
Motion carried with 11 aye, 0 nay, 0 abstaining.

The next meeting of the Iowa Highway Research Board will be held Friday, January 28, 2011, in the East/West Materials Conference Room at the Iowa DOT. The meeting will begin promptly at 9 a.m.

_____
Mark J. Dunn, IHRB Secretary